

Reviews and Bibliographical Notices.

1.—DISEASES OF THE NERVOUS SYSTEM.

KRANKHEITEN DES NERVENSYSTEMS. ZWOELFTER BAND. ZWEITE HAEFT. Von Prof. Dr. Eulenberg, Prof. Dr. Nothnagel, Dr. Jos. Bauer, Prof. Dr. v. Ziemssen, und Prof. Dr. Jolly. (Handbuch d. Spec. Path. u. Therapie.) Leipzig. 1875. P. 600. (*Diseases of the nervous system, etc..*)

We have looked with no ordinary expectation, for this volume, and upon the whole, have not been disappointed.

Together with its companion, (by Dr. Erb, already reviewed in a former number of the JOURNAL,) it forms one of the most striking and valuable portions of Ziemssen's handbook. Several of the most celebrated clinical neurologists of Germany have contributed to it, as will be at once seen on looking over the list of names of its authors. It comprises six separate memoirs, or treatises, as follows: 1. *Vaso-motor trophic neuroses*, by Dr. Eulenberg of Griefswald. 2. *Epilepsy and Eclampsia*, by Dr. Nothnagel of Jena. 3. *Tetanus*, by Dr. Bauer of Munich. 4. *Catalepsy, Tremor, and Paralysis Agitans*, by Dr. Eulenberg. 5. *Chorea*, by Prof. Ziemssen of Munich, and 6. *Hysteria*, by Prof. Jolly of Strasbourg.

These memoirs are not simply summaries of our previous knowledge, but actual contributions to the subjects of which they treat, by those who have been greatly instrumental in the recent progress of neurological medicine. And it will be our aim in this notice, to give our readers a view of the most valuable matter contained in the work.

The first paper,—that by Dr. Eulenberg,—is divided into seven parts, viz.:—*Hemicrania*,—*Angina pectoris*,—*Unilateral progressive atrophy of the face*,—*Basedow's (Grave's) disease*,—*Progressive muscular atrophy*,—*Pseudo hypertrophy of the muscles*,—and finally, *True muscular hypertrophy*—and comprises 171 pages, and is one of the most valuable in the present volume. Dr. Eulenberg, in company with Dr. P. Guttmann, had already written on the same subject, at length, in a couple of articles published in the *Archiv f. Psychiatrie und Nervenkrankheiten*. The present memoir is but little more than an elaboration of those papers.

Hemicrania (Migraine), is defined as a group of symptoms,

(*Symptomen-complex*) "characterized, generally speaking, by attacks of spontaneous pain, arising unilaterally, often not clearly limited, as to the region it occupies, usually alternating with extended painless intervals, chronic as a rule, as regards duration, recurring with annoying frequency, during many years, or even the whole life of the individual, and often depending on hereditary influence."

A brief history of the disease is given, beginning with a mention by Bartholin, (1684) and extending down to the observations of Du Bois Reymond, Moellendorff, Berger, Brunner, Holst, and others. In the causation of the disease, Dr. Eulenberg lays much stress on sex, age, and hereditary constitution. The disease preponderates in the female sex, as compared with the male, in the proportion of 5: to 1, as determined by his own experience. But this is certainly a higher proportion of cases, in the female sex, than others have admitted, or than is justified by our own more limited experience. Erb, a countryman of Eulenberg, for example, finds neuralgias in general more frequent in males than females. In our own observation, however, cases of neuralgia of most kinds, preponderate amongst females, in this country.

In respect to hereditary constitution disposing to the occurrences of hemicrania, Dr. Eulenberg admits the existence of a definite class of "Constitutional Neuropathies," first definitely formulated by Griesinger, and of which the disease under consideration is a member. He notices the fact, now so well known, as to the commutation as between the various species included under the class, and which has been spoken of by many other observers. What this hereditary disposition consists in, Dr. Eulenberg does not attempt to declare. He says, we know nothing as to the direct and immediate cause of hemicrania. The influence of dyscrasias, such as the anæmic, chlorotic, syphilitic, arthritic, mercurial, etc., are very briefly discussed.

He considers very properly that the views of Du Bois Reymond, Moellendorff, and others, as to its dependence on a distended, or a contracted state of the muscular vessels of the locality to which the pain is limited, (the alteration in the caliber of the vessels, depending on altered vaso-motor nervous action) to be only an approach towards an explanation of the morbid process in this disease.

Next follows a very full and clear description of its phenomena which appears to be not materially different from those already given by himself in his earlier works—*Functionellen Nervenkrankheiten*—and *Pathologie des Sympathicus*. But no mere abstracts can fairly represent to the reader this admirable account of the disease in question. According to our author, the painful points (*points douloureux*) of Valleix wholly fail in pure hemicrania. Hyperalgesia of the scalp is present, however, frequently. Those cases which exhibit marked vaso-motor dis-

orders, often show a painful condition of the cervical ganglia of the sympathetic, at least to the touch, and at times of the spinous processes of the inferior cervical or superior dorsal vertebræ. He says that the sense of touch is often increased (hyperpselaphesia) in the skin of the affected side of the head.

In this relation, reference is made to a case, reported by O. Berger, in *Virchow's Archiv*, and which was translated for this Journal during the past year.

Two classes of cases of hemicrania may be distinguished according to the presence or absence, or varying relations to each other, of certain local vaso-motor, temperature, secretory and pupillary phenomena. These classes are at least two in number, and include, 1. Those cases in which, at their height, the affected side is pale and cold, the eye sunken, the temporal artery is smaller than natural, and very hard or tense, and *the pupil is enlarged*. The ear of the affected side is paler and colder than that of the opposite one. Whatever increases blood pressure in the head, increases the pain, and it is momentarily increased with each heart throb, which is, of course, followed by the arterial pulse, which, for the moment, increases vascular tension. As the attack begins to pass away, there is an inverse change in all the phenomena named. The symptoms we have given do not, of course, exhaust the list, but are among the most prominent. They all show an irritated or excited state of the vaso-motor nerves of the vessels of the affected region, which provokes the muscular tissue in them to extraordinary contraction, and this condition of the vessels of the painful region and their related nerves, is thought to be in some way vitally connected with many cases of hemicrania. This is the *hemicrania sympathico-tonica*, first described by Du Bois Reymond, from an observation of the phenomena in his own case. 2. In the second class of cases, to the contrary, when the attack is at its height, the affected side of the head and face, as compared with the opposite one, is red, and relatively hot; there is congestion of the conjunctiva, free secretion of tears, contraction of the pupil. There are also, in many of these cases, narrowing of the palpebral fissure of the affected eye, or slight ptosis, and contraction of the globe. The corresponding ear is reddened, its temperature is elevated, there is often sweating—in some cases a true *epidrosis lateralis*. The temporal artery is enlarged and pulsates strongly, and sometimes the corresponding carotid. Compression of this last relieves the pain temporarily in a degree. The pulse is generally slow. Ophthalmoscopic investigation shows an enlargement of the central vessels of the retina, both arteries and veins, and in general increased vascularity of the fundus oculi.

As regards its characteristics, this class of cases is opposite to the first class. It is the *Hemicrania neuroparalytica* of Moellendorff. It depends quite evidently on a temporary paralysis of the so-called vaso-constrictors, or undue stimulation of the vaso-dilator nerves of the affected vessels.

But all, or even a majority of cases, cannot be classified in an undoubted manner, under one or the other of these heads. Many are doubtful or mixed. But all show with some clearness, that the vaso-motor nerves of the vessels of the affected region, are prominently involved in the disease.

From this general description of hemicrania Dr. Eulenberg passes to an analysis of separate symptoms, and first, of that of spasmodic contraction of the muscular vessels of the affected side of the head. The seat of the disease is made the subject of extended remark, and is referred to the cervical portion of the sympathetic nerve, or to that portion of the spinal cord (lower cervical and upper dorsal), where the cilio-spinal and spinal vaso-motor centres for the head, or rather the superficial parts have their seats.

The proofs of this are declared to be the condition of the pupil, which is said to depend, as regards its size, very much, on the state of the sympathetic, that of the tenderness of the superior and sometimes the middle cervical ganglia of this nerve, and the immense increase in the salivary secretion often observed, the secretory nerves for these glands being contained in the cervical sympathetic, as one is left to infer according to Dr. Eulenberg.

But in our opinion these views are open to serious objection. And first as regards pupillary changes. It seems to be pretty well established, that the nervous influence which when exerted, leads to contraction of the pupil, may be conveyed by fibres contained in the motor oculi, in the present case, and which have no direct ascertainable connection with the sympathetic proper. If so, contraction of the pupil may not be an evidence of disease of the sympathetic, as indeed, in our opinion it is not in the present case.

Then again it seems to be assumed that the vaso-motor nerves of the brain as well as of the external soft parts of the head, are contained in the cervical sympathetic. But there is certainly some reason for thinking that the vaso-motor nerves of certain parts of the brain at least, are not derived from the cervical sympathetic, and that they may not participate in, or be affected by disease of the latter.

Dr. Eulenberg seems to hold that the secretory nerves of the salivary glands are contained in the trunk of the cervical sympathetic, but this cannot be altogether true.

The chorda tympani, is apparently the secretory nerve for the submaxillary gland, and it is certainly not derived from the cervical sympathetic. The secretory nerves are contained rather in the trunks of the cerebro-spinal nerves, as indeed—it must be said—many of the vaso-motors, seem to be. Then, again, what real reason is there for thinking that the dilatation or contraction of the vessels, and the consequent local disturbance in the circulation is the cause of the pain? Does not the fact, that opposite conditions of circulation in the affected part, lead to the

same painful symptoms in different cases, appear to show that the circulation can have but little to do with it? Does it not often happen, that quite as marked changes occur in the local circulation of even the same parts without such pain as we see in cases of hemicrania? We have seen cases, in which there was no perceptible change between the two sides of the head, during a severe attack. Evidently we must look to some other seat for the disease, than the sympathetic or vaso-motor nervous system itself. In our opinion, its principal or even essential seat is in the sensory nucleus of the trigeminus of the affected side. Its sensibility to painful impressions is to such a degree increased, above the normal state, as to cause even ordinary sense impressions reaching that nucleus, from whatever direction to produce pain. The irritation of a diseased tooth, over use of the eyes, exposure of the face to cold, especially if the exposure is prolonged, a bad state of mouth produced through gastric disorders, especially if irritative in character, loss of sleep, great fatigue from any cause, depressing emotional states, etc., etc., will bring on an attack in those inclined to the disease.

But what produces this irritable state of the nucleus of the trifacial nerve, in the first instance—and what is the state in question? Can it be described?

The nucleus of the trigeminus in our opinion includes in every case, a lesion of nutrition, in which there has been a more or less permanent loss of balance, as between waste and repair. The intimate texture of the sensory nerve cells, has been wasted to the point where painful irritation sets in—where the very existence of their fundamental structure is threatened. Under such circumstances, the sense of pain, in the affected part, is so much exalted, that the most ordinary sense impressions reaching the sensory cells in question may react with, or produce pain. The capacity of appreciating impressions of touch as such, is often diminished, in the affected centre, as is proved by the presence of anesthesia in many of the worst cases of trifacial neuralgia, especially if of some standing. But the capacity for being thrown into that state which is interpreted on the side of consciousness, as pain, is greatly increased. This state may be either hereditary or acquired.

The fact that it may become hereditary, only serves to show how deep an organic seat the disease may have. People are coming into the world, daily, with certain parts at least, of their nervous system in a tricky, frail state, predisposed to exhaustion, and all of its bad consequences. Such persons easily fall into the sensitive neuralgic condition, which is the background of all true hemicranias. Any prolonged and exhaustive irritation, or excitation of the trigeminus in either of its three branches, especially in persons of neurotic temperament, may bring on the disease. This is all the more apt to be the case if at the same time there is concurrent anæmia, and exposure to the action of malaria.

We are far from supposing this statement includes all the phenomena of a typical attack of hemicrania. But it is not inconsistent with any fact so far as we know. Certainly it does not fall into the apparent inconsistency, of attributing the immediate phenomena of the attack to a mere incident in its cause, as is done in making them depend on the contradictory states of the fullness of the blood vessels. The vaso-motor disturbances, which are manifested in the sphere of distribution of the trigeminus, we are greatly inclined to attribute, not so much to disease of the cervical sympathetic, in the majority of cases as to that of the vaso-motor nerves which accompany the fibres of the trifacial, and are not therefore, included in the cervical sympathetic. Such fibres at their central termination, may be supposed to sustain close relations with the sensory nucleus of the trigeminus, and to be liable to participate in various degrees and ways in its disorders. This view does not exclude that which would make circulatory disorders in the affected region sometimes depend on the cervical sympathetic. This admission would not affect the possibility of the vasal disturbance depending on the supposed condition of the sensory nucleus of the trigeminus. For there is ample reason for thinking that the central relations are very intimate, between the sensory and vaso-motor nerves distributed to the same regions of the body.

We might pass on to show how the view of the pathology of trifacial neuralgia, to which we have referred, is indirectly supported by the known best means for its alleviation or its cure, such as functional rest, improved nutrition, tonics, and combined anodyne and sedative treatment. But we cannot do so for want of the requisite space and time. In our judgment the most important point in the nervous mechanism on which the attention should be fixed, in this form of disease, is the nucleus of the affected nerve, whatever may be true as regards its trunk. We cannot agree, therefore, with certain of the statements made by Dr. Eulenberg, neither as to what they declare or imply. The pain may be synchronous with the increased local blood-pressure, but, really, does not depend on it in any important sense, being simply one out of many causes operating peripherally, which are capable of playing harshly on the painfully sensitive centre. The pain in hemicrania can be said to be peripheral therefore, only in accordance with the terms of Romberg's law of excentric projection.

Dr. Eulenberg sums up his own views as follows: "Local anomalies of the circulation are probably in hemicrania (migraine),—without reference to their specific modes of origin,—to be considered as the most essential and general casual facts, etc." [p. 20.] The effects of these circulatory anomalies are, according to our author, expended in an irritation of the periphery of the sensory nerves, either of the integument, pericranium, dura mater, or brain itself. But nothing is said as to the condition of the sensory center to which the nerves lead, on

which we have laid so much stress in the foregoing remarks.

We have given so much space to the pathology of hemicrania because we deem the subject a highly important one,—not alone in its relations to this, but to many other forms of neuralgia.

There are other occasional phenomena of the disease, to which we would be glad to call attention, but cannot afford the space nor time.

The remarks under the head of *course* and *prognosis* contain nothing new, the former, as a rule, being long, and the latter, somewhat unfavorable, especially if clearly hereditary.

As regards treatment, much reliance is placed on ergotin, and in certain cases, to relieve the attack, the nitrite of amyl. Eulenberg gives a very salutary caution in respect to the use of the latter agent, advising to begin with one drop at a time, and by a gradual increase of the dose to ascertain the susceptibility of the patient to the remedy. Much reliance is placed on the employment of electricity, especially the galvanic current. He recommends its application over the cervical sympathetic, the directions for which are given in various standard works on the medical uses of electricity. Mention is made also, of the use of the induction current, more particularly as recommended by Frommhold, of Pesth, and by Fieber. It is not much esteemed by Dr. Eulenberg: but from our own experience we can recommend its trial, especially the use of the electrical hand, as described by Fieber. In other respects the treatment is much the same as is given in our older standard works.

The next subject is that of *Angina Pectoris*. It is characterized as "pain arising paroxysmally in the region of the heart, usually confined to the left side of the thorax, and left arm, rarely involving both sides and both arms,—the pain of a darting or radiating and agonizing character, accompanied by a feeling of contraction or compression in the affected part, and frequently combined with various motory, vaso-motor, and sensory disorders." [p. 30.] The intervals are usually painless. The attacks may be comprehended under the head of Visceral neuralgias, according to Dr. Eulenberg.

A brief review of different opinions as to the nature of the disease, is given next in order, with special reference to the physiology of the cardiac nervous apparatus, as it is now understood in the light of the researches of Bezold, Goltz, Bernstein, Ludwig, M. and E. Cyon and others.

He seems inclined to connect this neuralgic cardiac disorder with such organic affections as stenosis of the aortic or other openings, and especially with disease of the vaso-motor system of the heart. It is one of a large group of neuroses, in which hysteria, epilepsy, various forms of insanity, etc., are members. It may be and frequently is hereditary. He quotes with approbation the results of the physiological analysis by Landois, in which cases of the disease were arranged under four

heads, viz.: 1. Cases of disordered action of the excito-motor cardiac nervous system. 2. Cases produced by irritative conditions of the vagus, or some of its cardiac branches. 3. Cases produced in a reflex way by reflex irritation of the cardiac nervous apparatus, on account of disease of the organs within the cavity of the abdomen. 4. Cases depending on actual disease of the whole or at least a part, of the vaso-motor apparatus of the heart—*angina pectoris vaso-motoria*.

The disease is more common in middle and advanced age, and among males as compared with females, in the proportion of 11 to 1, according to Dr. Eulenberg.

Prolonged exposure to cold, and the intemperate smoking of tobacco, are mentioned as frequent causes. In respect to the use of tobacco as producing angina, Dr. Eulenberg agrees with M. M. Beau, Savalle, Champonière, Blatin and others.

The account of the symptoms of the disease, though brief, is one of the best we have seen.

The opinion that it depends on organic changes in the heart, such as stenosis of the cardiac orifices, or fatty or chalky degeneration of the coronary arteries, is not borne out by the records of pathological anatomy, for Senac, Corvisart, Bianchi, and others have reported cases of extended changes of the kind now referred to, and yet without angina, while such writers as Jucine, Johnston, Lentin, Erdmann, Desportes, Heusinger and others, have reported cases of the disease with entire absence of such organic changes.

As respects anatomical changes in the nervous apparatus of the heart, until recently they have not attracted much attention. Among the few cases, however, on record, Dr. Eulenberg mentions the case reported by Heine in 1841 from the clinic of Skoda, in which both the phrenic and vagi nerves were the seats of morbid structural changes, consisting of dark or black enlargements along the course of the nerves. The post mortem was made by Rokitansky. Abstracts of a case reported by Haddon in the *Edinb. Med. and Surg. Journal* for July, 1870, and of three others by Lanceraux, are given, which substantially agree with that of Heine, in respect to the character of the changes observed. The somewhat sparse results from the domain of morbid anatomy, so far as they go, justify us in placing the seat of the disease, so far as the heart is concerned in its nervous apparatus, especially those nerves which participate in the formation of the cardiac plexus.

Our author does not seem inclined to adopt the hypothesis of Eichwald, who ascribed the painful attacks to a diminution in cardiac activity, by reason of which the heart is oppressed with blood, and hence the pain, which he supposed to be due to distension and overstraining.

The pains in the left shoulder and arm, and region of the diaphragm, are easily explained according to Dr. Eulenberg, by a reference to the known anatomical relations of the cardiac,

brachial, and phrenic nerves, and to the well known "law of irradiation," which constitutes one of the so-called "Romberg's laws." The feeling of anguish in the prae-cordial region, that forms one of the frequent symptoms of this disease, receives no explanation, except that it is an incident of the pain. Dr. Eulenberg has met with it, in other forms of visceral disease.

The disordered action of the heart he believes to be due to disease of the intrinsic, automatic nervous apparatus of the heart. In support of this view he quotes certain experiments of Landois, (Griefswalder Med. Beitræge II., 1864, S 161,) in which, by means of the injection of a weak solution of certain poisons, beneath the endocardium of frogs, irritation of the intrinsic ganglion cells, and quickened heart action was the immediate result, while the injection of larger quantities, to the contrary, caused sudden paralysis of the ganglion cells and stoppage of cardiac action. Now if in some analogous way the regular rythmical action may be interrupted, and hence abnormal resistance of the blood to the heart should arise, as in aortic anomalies, atheromatous disease of the vessels of the heart, or if by reason of thrombosis or embolism of the coronary vessels the intrinsic ganglia of the heart should fail of receiving the normal blood supply, or if the same results are produced in the course of disease of the muscular substance of the heart, as in myocarditis or fatty degeneration, etc., we may have such a change in the relations of the heart's action to the movement and pressure of the blood, as to give rise to many of the symptoms of the attack.

The disease might, therefore, be named, "*cardiac excitomotor*, or as *cardiocentric*." To the farther support of this view he cites an experiment of v. Bezold's, in which after section of the vagi, cervical sympathetic, and cervical portion of the spinal cord, he seized with forceps the coronary arteries, or certain of their chief branches, and thus in greater or less degree, prevented the introduction of blood into the muscular substance, and to the intrinsic nervous ganglia of the heart. He saw its beats at once diminish in number, and soon cease altogether, or until blood was once more permitted to circulate in the coronary arteries. It is not difficult for us to see how it might come to pass, that pathologically the same conditions could be imitated so as to disorder or even arrest cardiac action, as in the experiment of Bezold.

Then again, cases of disordered action of the heart, might be produced on the one hand, through irritation of the vagus nerve, which is an extrinsic inhibitory, or regulator nerve of the heart, and which might be the cause of an attack of angina. It acts on the intrinsic motor ganglia rather than the muscular tissue of the heart, or even its vessels, and on the well-known principles of *arrest* in nervous physiology, it slows or even abolishes cardiac action. In some similar way extra cardiac disease may lead to the morbid action of the heart; witnessed in angina pec-

toris. But the action of the vagus, may be either direct or reflex, and if the latter, may have a cerebral origin, as during the prevalence of strong emotion, or an abdominal origin, for example, as was first noted by Ullsperger, (*Die Herzbraune*, Neuweid med., Leipzig, 1865.) For it is well known that experimental irritation of the sympathetic within the cavity of the abdomen, will often lead to an arrest of the action of the heart in diastole. Dr. Eulenberg mentions in illustration of this a case where enlargement of the liver was attended by disordered cardiac action, which seemed to go and come with the liver disorder, and finally disappeared with the cure of the latter. But we very much question the correctness of the assumption, which would make the cardiac disorder to depend on the hepatic. We would refer both affections to a common source in which the pneumogastric was intimately concerned. This will appear all the more probable, when it is remembered, that section of the vagus at or near the level of the diaphragm, is immediately followed by intense hyperaemia of the liver, as has been shown by Vulpian. The bearing of this fact does not seem to have been noticed by Dr. Eulenberg.

Our author also discusses the effects of a sudden increase of vascular tonus, through excitation of the vaso-motor nervous system, more especially its vaso-constrictor fibres, by which there is caused contraction of the small muscular arteries of most parts of the body, and which in turn causes a sudden increase of resistance to the action of the heart. This gives rise to feelings of praecordial oppression, anguish and even pain in some cases. In this way perhaps, may attacks of angina be excited, provided the nervous apparatus of the heart is already in a preternaturally excitable state by reason of disease. This is the "*angina pectoris vaso-motoria*" of Landois. Dr. Eulenberg, mentions, but does not assign so important a place, as it seems to us should be, to the so-called "depressor" nerve of Ludwig and Cyon. It is the principal sensory nerve of the heart, and should be permitted to play a much more conspicuous rôle in such a disorder of the cardiac sensory nervous apparatus, as is angina. But we cannot now afford, either space or time, in which to discuss this subject adequately.

Dr. Eulenberg emerges from his discussion with four types of cases of angina, as follows:

1. *Excito-motor cardiac, or cardiocentric ganglion, angina pectoris*, depending on direct lesion of the automatic excito-motor ganglia of the heart.

2. *Regulator angina pectoris*, depending on lesion of the inhibitory nervous apparatus, comprising *direct*, and *indirect* (reflex) *neuroses* of the vagus.

3. *Excito-motor sympathetic angina pectoris*, depending on lesion of the "accelerator" sympathetic fibres.

4. *Angina pectoris vaso-motoria*, such as was last described above, before citing these types of Landois and Eulenberg.

Such is a brief summary of the discussion of Dr. Eulenberg, in respect to the pathology of *angina pectoris*, including a few comments or hints of our own, on the points that have been passed in review. We have given so much space to this subject as has been, for the reason that the disease, though rare comparatively, is a profoundly interesting one, concerning one of the most important organs in the economy. Its careful discussion cannot fail to develop principles, which have a far wider range of application than they do in the domain of the single form of disease now under discussion.

The diagnosis of *angina pectoris* is comparatively easy. Its prognosis depends largely on the seat and extent of disease of the vascular and nervous systems, which enter into it as its peculiar or its accessory morbid elements.

Among the multitudes of palliative remedies proposed, our author gives the preference to hypodermic injections of morphia, to relieve the attack when it once appears. In cases of *angina vaso-motoria*, he has found good results to follow the use of amyl-nitrite, as was originally suggested by Brunton.

Mention is made of the preparations of iron, zinc, (the sulphate and cyanide,) arsenic. The latter seems to have good effects in some cases. The use of the bromides, especially the bromide of calcium, as was first suggested by Hammond, is spoken of with approval. The application of irritating plasters to, and especially the use of setons in the region over the heart, has been well spoken of, and such means are approved by continued experience according to Dr. Eulenberg. Also faradisation of the skin over the seat of the pain, using the wire brush electrode, as was first recommended by Duchenne, is mentioned with approval, not only for relief during the attack, but as a curative means in the intervals. Dr. Eulenberg enters at some length into the question, as to how irritation may prove beneficial in *angina pectoris*.

But though the question is an interesting one, we must pass it by at this time. Our author, in conclusion, strongly recommends the cautious, faithful use, of the constant current, so as to include the cervical sympathetic. The preferable method, so he says, is to apply the positive pole with a broad electrode over the sternum, especially its lower part, and the negative over the lower cervical region.

The next subject in the interesting paper of Dr. Eulenberg, is that of "unilateral progressive atrophy of the face." But we must postpone any farther notice of the contents of this interesting volume until the next number.

(To be Continued.)